

REMARKS

Claims 1, 4 and 11-12 are pending. Claims 2, 3 and 5-10 were previously canceled without prejudice. Claim 11 has been amended to fix a certain minor informality. Thus, no new matter has been added by way of the present submission.

Applicants submit that the present Amendment is merely formal in nature, presents no new issues since claim 11 is merely amended to correct a typo. Thus, additional search and/or consideration on the part of the Examiner would not be required. In the event that the present submission does not place the application into condition for allowance, entry thereof is respectfully requested as placing the application into better form for appeal.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Priority

The Examiner acknowledges a claim for priority based upon Korean Application 10-2003-0097275 which was filed in Korea on December 26, 2003. However, a copy of the certified copy of this priority document was not forwarded to the USPTO during prosecution of the PCT application. Thus, Applicants filed a request for USPTO to retrieve priority documents on February 19, 2010. The Examiner is respectfully requested to reexamine the case file at the U.S.P.T.O. in this matter. Acknowledgment of receipt of the certified Priority Document is respectfully requested in the next Office Action.

Claim Objection

In the paragraph numbered as "5" on page 3 of the Office Action, the Examiner objects to claim 11 due to a minor informality. In response, Applicants have amended claim 11 to be dependent on claim 1. As such, withdrawal of the objection is respectfully requested.

Issues Under 35 U.S.C. § 103(a)

Claims 1, 4 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (WO 03/087447); and Claim 11 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee in view of Understanding Textiles by Tortora et al. These rejections are respectfully traversed.

The Present Invention and its Advantages

Claim 1 of the present invention is directed to a cleansing polyester fabric, which comprises (i) a polyester multifilament consisting of ultra fine yarns (monofilament fibrils) of 0.001 to 0.1 deniers or its false twist yarn as warp and (ii) a false twisted yarn consisting the polyester multifilament consisting of ultra yarns (monofilament fibrils) of 0.001 to 0.1 deniers and a high shrinkage polyester multifilament with 10~50% of shrinkage rate in boiling water as weft, wherein the fabric weave is a plain weave or twill weave, and the fabric satisfies the following properties; Sum of warp density and weft density : 220-320 yarns/inch, Thickness of the fabric : less than 0.3 mm, Weight of the fabric 70-180 g/m².

The cleansing polyester fabric of the present invention has improved cleansing effects and does not damage the surface of cleaned object because there is no twisted point in the fabric.

Distinctions Over the Cited Art

After careful review of the Examiner's comments in the outstanding Office Action, Applicants respectfully disagree with the Examiner. The following table highlights the distinctions between the present invention and the teachings of Lee.

	The Present Cleansing Polyester Fabric	Lee's textured yarn
Construction	<u>As warp yarn</u> polyester multifilament consisting of ultra fine yarns of 0.001 to 0.1 deniers or its false twist yarn	<u>As effect yarn</u> two-component composite yarn having a monofilament fineness of 0.001 to 0.3 and being an air-textured yarn (ATY). such effect yarn can be a false-twisted yarn (page 12, lines 18-23 of Lee)
	<u>As weft yarn</u> false twisted yarn consisting of the polyester multifilament consisting of ultra yarns of 0.001 to 0.1 deniers, and high shrinkage polyester multifilament	<u>As core yarn</u> thermoplastic polyester multifilament yarn being an ATY. The yarns have a fineness between 1-8 deniers (page 8, line 21 to page 9, line 5). The yarn is twisted (referred to as "twining" in Lee).

As seen from the above table, the present fabric is distinct from the fabric of Lee, because the core yarn of Lee has a fineness of 1-8 deniers (page 8, line 21 to page 9, line 5), whereas the fineness of the inventive weft yarn is 0.001-0.1 denier. In fact, Lee *teaches away* from using a core yarn having lower than 1 denier. At page 8, lines 21-23, Lee states: "If the monofilament fineness of the thermoplastic multifilament yarn(core yarn) is lower than 1 denier, the drape property of woven or knitted fabrics is reduced." As such, the artisan would be reluctant to use a weft yarn having 0.001-0.1 denier, as presently claimed based on the teachings of Lee.

Furthermore, there is a distinction in the twisting of the yarns. The core yarn of Lee is twisted, because the yarn is made through air texturing and twisting (referred to as "twining" in Lee), which is distinct from the present invention which includes a weft yarn that is false-twisted.

In the fabric field, it is well known that a yarn made by false twisting has no twisted point. As evidence of this fact, Applicants respectfully draw the Examiner's attention to the website of <http://www.polyspintex.com/ups/text04.htm>. This website teaches that the false twist is formed by the release of the twisting point, at which time all the twist disappears. Therefore, there is no twist point in the weft yarn of the present invention after being false twisted. Accordingly, it is apparent that a false twisted weft yarn (of the present invention) and a real twist yarn (Lee's ATY) are distinguishable from each other.

In this respect, as discussed above, the twisted point of the fabric of Lee is formed when one effect yarn is "twined around" another core yarn by way of air texturing process. For example, Lee teaches such a configuration in disclosures at page 5, line 23-page 6, line 6, page 7, lines 3-8, lines 17-25, and page 17, lines 15-25 of Lee. Thus, it is clear that ATY of Lee is manufactured without false-twisting and provides a twisted point (twined point). Also, such an ATY will damage the surface of the object to be cleaned and will have a low cleansing effect in view of the twisted point in the warp and weft. However, the cleansing polyester fabric of the present invention has improved cleansing effects and does not damage the surface of cleaned object because there is no twisted point in the weft of the fabric. As such, significant patentable distinctions exist between the present invention and the teachings of Lee.

Lastly, the deficiencies of Lee cannot be cured by Tortora, since Tortora also fails to disclose or suggest the claimed features described above.

In view of the above remarks and amendment, Applicants believe the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq., Reg. No. 43,575 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Application No. 10/583,895
Amendment dated October 21, 2010
After Final Office Action of April 21, 2010

Docket No.: 4555-0111PUS1

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Dated: October 21, 2010

Respectfully submitted,

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Attachment: A copy of <http://www.polyspintex.com/ups/text04.htm>

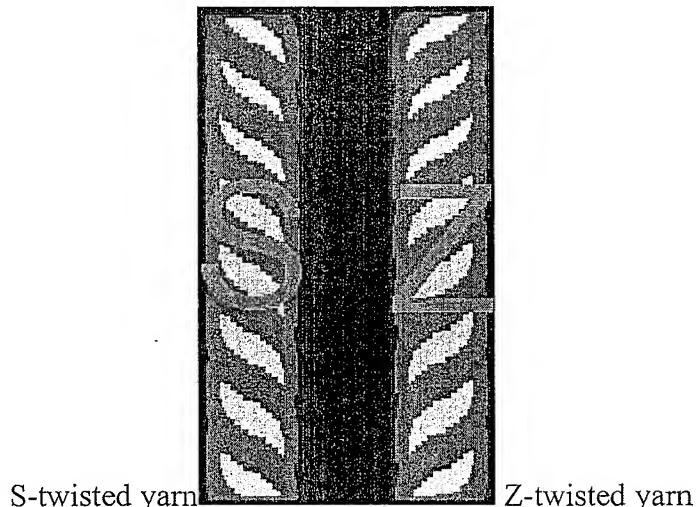
Udo Schweizer's Texturing Pages

FALSE TWIST TEXTURING PRINCIPLE

Most textured yarns are false twist textured. This page will explain what false twisting is and why it has been such a tremendous success. It starts with an explanation of the real twist texturing and finishes by looking at the speeds, which can be reached today using false twist texturing.

What is the difference between S and Z twist:

There is a little and a lot of difference. Both, S and Z means real twist in a yarn. The difference is that one yarn has been twisted into the opposite direction of the other yarn. Basically one yarn is the mirror image of the other. The difference is very significant as S-twisted yarn will look in a fabric different to a Z-twisted yarn.



The "Real Twist" texturing principle:

The thermoplastic properties of synthetic yarn allowed the thermo setting of real twisted yarn. Backtwisting this yarn resulted in a twistless yarn, in which the helix formation of the previously twisted yarn was still visible. This yarn looked surprisingly similar to natural fibers with the apparent crimps of real wool or cotton in each individual filament. This was a breakthrough. Instead of spinning endless filaments, stufferbox crimping them and then cutting them into staple length and then spinning them on a conventional staple spinning machine into a spun yarn, a process was born that allowed a filament yarn to look and feel like a spun yarn.

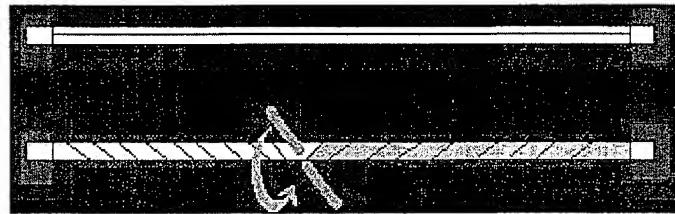
The production steps were as follows:

- twisting on (two for one) twisters
- autoclave steam stetting
- back twisting
- cone winding

The "False Twist" texturing principle

Think about holding a rubber band between two clamps and twist this band by turning it in the center.

You will observe real twist on the left as well as on the right hand side. But each side is twisted into the opposite direction. One side is S-, the other side is Z-twisted. The number of twists on the right side equals the number of twists on the left side.



As you release the twisting point, all the twist will disappear. You actually had created, what we call a "false twist". All modern texturing machines operate according to the false twist principle.

Let us now look at the dynamics of false twisting

Consider the above drawing with the yarn twisted into two twist directions and try to imagine the yarn to be endless. Substitute the fixed clamps with feed rolls. If you would start moving the yarn from left to right by keeping the peg in the twisted yarn bundle the twist on the right side would be moved and then disappear but the left side would stay twisted. This effect is the basis of all false twist texturing machines. Instead of using a peg, which creates a definite twist stop we are using friction disks, which accomplish the same and have the advantage of rotating the yarn. The drawing in my stretch yarn page shows a running yarn in a false twisting machine. When the process is started the twisted yarn on the right side is discarded to waste. The twist on the left hand side remains. Should the yarn break, the twisted yarn on the left hand side also goes to waste. If you would count the twist in both wasted ends you would find them to be exactly the same but in the opposite twist direction. In between the two waste ends miles of high quality textured yarn is produced.

Why is false twisting such a huge success?

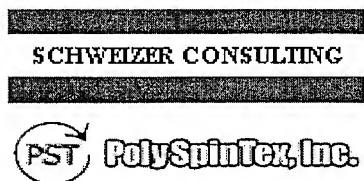
Real twist texturing was very slow and labor intensive. False twisting accelerated the process speeds from a few meters per minute to production speeds of more than 1000 m/min.

What is tangled DTY yarn?

Check out my interlace page

I hope that my explanation has helped you to understand the principle of the texturing process. There is much more knowledge out there, but unfortunately very little on the web. I will try to remedy this situation and welcome all suggestions. Please let me have your comments.

<http://www.polyspintex.com/form.htm>



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